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Implicit Threat Vigilance Among Violent Offenders Diagnosed with Antisocial Personality Disorder: The Impact of Ostracism and Control Threat

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Abstract
The present study investigated the role of control as a moderator in reaction to ostracism among male violent offenders diagnosed with ASPD ($N = 33$) compared to a control sample consisting of males from the normal population without a known history of violence, or diagnosis of ASPD, matched for age and educational level ($N = 35$). Participants played an altered version of the Cyberball game in which they could control the course of the game or not. The authors predicted and found that having control prior to ostracism would mitigate the effect of ostracism on implicit threat vigilance among violent offenders diagnosed with ASPD, but not among normal individuals. The results suggest that control needs are crucial in the typology of ASPD.

Keywords
Ostracism, cyberball, belonging, antisocial personality disorder, control

One of the most typical characteristics of individuals with an antisocial personality disorder (ASPD) is their violent and aggressive behavior in social relationships. Importantly, their behavior is not only destructive for the individuals around them, but also for themselves. These individuals alienate themselves from friends, family members and society in general, and often find themselves rejected for their disruptive behavior. Many end up in penitentiaries, which can be considered the ultimate form of social rejection.

In the current paper we aim to show that male violent offenders diagnosed with ASPD are acutely responsive to short experiences of personal control in a game of Cyberball (Williams, 2007), more so than individuals from a normal population without a known history of violence, or diagnosis of ASPD. More specifically, we hypothesize that for violent offenders with ASPD possessing control is so important, that a short experience of control will be enough to ameliorate threat vigilance in response to ostracism. For normal individuals we expect that the same control experience will have less impact on threat vigilance after ostracism.

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The Need for Control and Ostracism

The need for control is theorized to be one of the basic needs that is thwarted by ostracism (Williams, 2007). As such, one would expect that satisfying this need should offer relief from the immediate negative consequences of ostracism. Paradoxically, this seems not to be the case, at least not for individuals from a normal population; in a study conducted by Warburton, Williams and Cairns (2006), giving normal individuals

(students) control after a rejection experience, did not seem to mitigate the immediate social pain caused by social rejection. Only the more *delayed* response of aggression was mitigated by the control manipulation.

Many other studies show similar unmitigated stress responses towards social rejection among normal individuals. For example, the ostracizer can be a member of a despised out group like the Ku Klux Klan, a stranger, or even a computer – in all of these situations ostracism is always equally threatening (Gonsalkorale & Williams, 2006; Williams, Cheung, & Choi, 2000; Zadro, Williams, & Richardson, 2004). Even when the ostracizer had no choice in doing so (Zadro et al., 2004), or when being ostracized pays off financially (Lelieveld, Moor, Crone, Karremans, & van Beest, 2013; Van Beest & Williams, 2006), or when ostracism is shared, being rejected and ostracized hurts (Van Beest, Carter-Sowell, van Dijk, & Williams, 2012). Finally, also when participants themselves are responsible for their own exclusion, ostracism still hurts (De Waal-Andrews & van Beest, 2012). These findings underscore how important belonging is for human beings; rejection leads to immediate and unmitigated social pain, which is not easily soothed by potentially mitigating factors, not even by control.

Most reported studies on ostracism have been conducted among the typical student samples (with the exception of: Abrams, Weick, Thomas, Colbe, & Franklin, 2011; Masten, Eisenberger, Borofsky, Pfeifer, McNealy, & Mazziotta, 2009; Moor, Güroglu, op de Macks, Rombouts, van der Molen, & Crone, 2012; Sebastian, Viding, Williams, & Blakemore, 2010; Wölfer & Scheithauer, 2012). Whether individuals with ASPD will show the same unmitigated response towards ostracism the way normal individuals do, is therefore unknown. There is evidence that individuals from a normal population who score higher on traits related to ASPD – psychopathy, machiavellianism, and narcissism – are not less affected by ostracism (Williams, 2007). On the other hand, there is also evidence that normal individuals with traits related to Schizotypical personality disorder seem relatively less affected by ostracism. This effect is largely due to deceitfulness, a trait that is also related to ASPD (Wirth, Lynam, & Williams, 2010).

These observations raise the question whether individuals with ASPD would behave differently to ostracism than normal individuals. One reason why this may be the case is that ostracism undermines a personal sense of control over one's social relations, while this sense of control has a central role in ASPD.

The Need for Control and Antisocial Personality Disorder

Individuals with ASPD show many problems associated with social malfunctioning: repeated acts of aggression, selfishness, deficient moral reasoning, and a general under-socialization with a failure in maintaining meaningful relationships with others (Hare, 1993). In literature these problems have been associated with control needs. For example, aggression has been related to control needs (Dépret & Fiske, 1993; Frieze & Boneva, 2001; Mueller, 1983). More specifically, some acts of aggression may be used as a means to restore a sense of personal control or power (Baumeister, Smart, & Boden, 1996; Williams & Warburton, 2003). Furthermore, dysfunctional thought patterns about wanting to control ones' environment and others have been found to predict antisocial and criminal behavior (Mandracchia, Morgan, Garos, & Garland, 2007). For example, low perceived control has been found to be related to more violent abuse in relationships (Prince & Arias, 1994).

Second, under-socialization has also been related to control in literature, more specifically, to an external locus of control (Rain, Roger, & Venables, 1982). An external locus of control, in turn, has been related to deficient moral reasoning (Bloomberg & Soneson 1976). Locus of control refers to an individuals' basic belief system about the determinants of outcomes in his or her life (Rotter, 1975). Individuals with an external locus of control believe that the outcomes of their behavior are determined by luck or fate, by powerful others, or that their life outcomes are simply unpredictable. These individuals often have the feeling that 'things just happen' to them. In contrast, individuals with an internal locus of control believe that the outcomes of their behavior are contingent on their own behavior or personal characteristics. From a developmental perspective locus of control results from the process of learning associations between ones' own behavior and reinforcements of that behavior over time. Individuals who are exposed to a chronic inconsistency in parental discipline and reward at a young age are more likely to develop an external locus of control (Carton & Nowicki, 1994; Epstein & Kimorita, 1971; Krampen, 1989; Levenson, 1973).

In sum, we believe that individuals with ASPD experience a chronic feeling of control deprivation. This means that any threat to their sense of control due to rejection is experienced as a disproportionately hard blow. However, this also means that a temporary *gain*

in control should result in an equally strong positive experience as well. To explain this reasoning, consider the following analogy. An individual who is hungry and has not eaten for days would be extremely grateful for every bit of food he could obtain and would also react strongly if food would be taken away. We reason that violent offenders with ASPD are hungry for control. They therefore react strongly to both obtaining and losing control. It is exactly this that we aim to demonstrate with our studies; if it is true that offenders with ASPD are hungry for control, compared to normal individuals, they should be relatively less affected by ostracism once they feel they are in control.

Current Study and Hypotheses

We analyzed a group of male violent offenders who are clinically diagnosed with ASPD and a control group consisting of males from the normal population without a known history of violence, or diagnosis of ASPD. The control group was sampled from the non-scientific staff of Tilburg University. This group was comparable to our patient population regarding age and education level. At the time of the experiment all participants diagnosed with ASPD were placed under an entrustment order in the Netherlands (*Terbeschikkingstelling* or *TBS*). Under Dutch law, the entrustment order holds that offenders undergo involuntary treatment at a forensic psychiatric hospital for a fixed period of time, with the option for prolongation if there is still considerable risk for recidivism.

In order to induce control and ostracism we used the Cyberball paradigm (Williams, 2007). This is a computerized ball-tossing game. In the first round of this game, depending on experimental condition, participants either received high control over the game or low control. Then, in the second round all participants were ostracized. Our dependent variable was implicit threat vigilance, measured with a dot probe task (Mogg, Bradley, & Williams, 1995). Prior research typically uses self-reported explicit need threats to measure immediate responses to ostracism. We used an implicit measure of threat vigilance because we wanted to tap into a more immediate and cognitively unmitigated response to rejection. With this measure we aimed to uncover basic cognitive processing following ostracism and directly measure threat vigilance. These basic processes are ultimately thought to shape higher order responses that may follow the ostracism experience. Our choice for this measure is also in line with the reasoning that cues of rejection should automatically activate a defensive response system that heightens vigilance for subsequent cues of rejection (Downey, Mougius, Ayduk, London, & Shoda, 2004; Williams, 2001, 2007).

In sum, we expect that among male violent offenders with ASPD a short experience of control will mitigate threat vigilance in response to ostracism. For normal individuals we expect that the same control experience will mitigate threat vigilance to a lesser extent.

Method

Participants and Procedure

Participants were male criminal offenders diagnosed with ASPD ($N = 33$; $M_{age} = 40.33$; $SD_{age} = 10.22$) recruited at the Van Mesdag Clinic in Groningen and male Tilburg University service staff members ($N = 35$; $M_{age} = 42.77$; $SD_{age} = 12.01$). All participants signed a consent form and received a monetary compensation for participating in the study[1].

The two samples were tested at different locations and in different periods in time. Therefore, we analyzed our patient and control population separately. Importantly, the experimental procedure was identical for both groups of participants – each participant sat in a private room and received instructions regarding the Cyberball game. After Cyberball the computer program automatically switched to the dot probe task that we used to measure implicit threat vigilance. Instructions regarding this task were provided by the computer program.

Cyberball

Cyberball is an online ball tossing game (Williams, 2007). In our version of the game participants played with three other computer generated players (see Zadro et al., 2004, for a similar procedure). This means that participants knew they were playing against the computer. Each computer generated player had its own unique picture of a male face. Participants could pass the ball to another player by pressing certain keys. All participants played two rounds of Cyberball, of each 5

[1] At the end of the experiment we also took a measure of interpersonal closeness and status as part of a different study. Furthermore, among the participants without ASPD we also assessed delayed social pain, as measured with threats to control, belongingness, meaningful existence and self-esteem ($\alpha = 0.41$) at the end of the experiment. We found no effects on these measures and will not mention them further in our results section.

minutes. In the first round, depending on experimental condition, participants either played a high control game, or a low control game. In the low control game the participant could pass the ball after he received it from one of the other players. The participant was thus dependent on the behavior of the other players before being able to pass the ball. In the high control game participants could determine the entire course of the game themselves. This means that they could determine for the other players to whom they should pass the ball, including to themselves. Then, in the second round all participants played a low control game. After 1 minute into the second round, all participants experienced the same exclusion in which the other players completely stopped passing the ball to the participant for 4 minutes.

Relative Game Inclusion

Due to the specific set up of our study – in the high control game participants could determine themselves how many times they received the ball, and both games were set to run a specific amount of time, instead of a specific number of ball tosses – we obtained between subject variations in how many ball tosses participants received (or claimed) during the first round of the game (in which the manipulation took place), as well as in the second round of the game. We used this variation as a continuous independent variable and operationalized it as level of game inclusion; the more balls were obtained by the participant *relative* to the total amount of ball tosses in both rounds of the game, the higher the game inclusion for that participant. We used game inclusion as a continuous independent variable in our analyses. In this way we could analyze the impact of game inclusion on threat vigilance and also how control could moderate this effect.

Attention to Threat

Directly after Cyberball, participants completed the dot-probe task that we used as an implicit measure of threat vigilance. The dot-probe task is a computerized reaction time task that measures attention to specific target stimuli. The task requires participants to respond to a dot probe, a small black dot (3 mm's in diameter), that is initially hidden from view behind one of two target stimuli.

The target stimuli consisted of pictures of 20 different males. Each picture had a version showing a neutral expression and a version showing an angry expression. These were novel faces – not those used in the Cyberball part of the experiment. At the start of each trial a small fixation cross appeared for a random duration between 1000 and 1500 ms and was followed by a blank screen for 200 ms. This was followed by the presentation of a picture pair, for the duration of 500 ms, just above and below this fixation point. Each picture pair consisted either of angry/neutral expression pictures (32 threatening trials), or neutral/neutral expression pictures (32 control trials). After the pictures disappeared, immediately a small black dot was revealed at the previous location of one of the pictures. In half of the threatening trials the dot appeared at the *same* location as the angry face (congruent trials), whereas in the other half of the threatening trials the dot appeared at the location of the neutral face (non-congruent trials). In the control trials the dot appeared randomly behind one of the two neutral faces. The trials were presented in a randomized order.

Participants were instructed to ignore the pictures, and to keep their attention focused on the fixation cross. They were instructed that their job was to indicate the location of the dot as quickly and accurately as possible by pressing "Q" for top and the "P" for bottom. When participants pressed the wrong key, the word "Fout!" (False!) flashed shortly on their screen before the fixation cross reappeared. Then, after pressing one of the two keys the dot disappeared, the fixation cross reappeared, and a new trial started.

Following Koster, Crombez, Verschuere, and De Houwer (2004) we compared reaction times (RT's) on congruent trials (the dot appearing at the same location as the angry face) with RT's on the control trials. Vigilance for threat should lead to faster responses on congruent threatening trials compared to control trials. This would indicate that attention is faster drawn to the threatening faces than to neutral faces. After completing the dot probe task, participants were debriefed and dismissed[2].

Results

Preliminary Analyses

Relative Game Inclusion

Among the participants with ASPD the total number of ball tosses in the two rounds of Cyberball ranged

[2]Before we approached the ASPD individuals we consulted a counselor and other researchers at the clinic to ascertain that our experiment would cause no harm. In case of non-intended psychological or emotional harm, individuals had the possibility to consult a counselor who was aware of the study being conducted at the clinic.

between 56 and 202 ($M = 114.70$, $SD = 23.88$). Our control manipulation did not affect the total number of ball tosses, $t(31) = 0.434$, $p = 0.667$, nor the relative number of balls participants themselves received $t(31) = -0.360$, $p = 0.721$. Among normal participants the total number of ball tosses ranged between 81 and 148 ($M = 115.56$, $SD = 18.73$). Again, our control manipulation did not affect the total number of ball tosses, $t(32) = 1.344$, $p = 0.188$, nor the relative number of balls participants received $t(32) = 1.654$, $p = 0.108$. See Table 1.

These findings show that in the low and high control games participants had a similar inclusionary status in the game. That is, independent of whether participants had control over their inclusion or exclusion, they had the ball equally often in their possession. This was the case for both the ASPD and populations.

Dot Probe Task

Trials in which the dot was falsely located were discarded (5.5 % for the participants with ASPD and 1.8% for the participants without ASPD. Reaction times (RT's) faster than 300 ms and slower than 3000 ms were eliminated (3.7 % for the patient population and 0.7 % for the participants without ASPD) (Ratcliff, 1993)[3].

Following Koster, Crombez, Verschuere, and De Houwer (2004) we defined threat vigilance as faster response latencies on congruent trials (where the dot appeared behind the angry face) compared to control trials (which contain two neutral faces). To this end we computed threat vigilance scores by subtracting average RT's on the control trials from average RT's on the congruent trials[4]. A Shapiro-Wilk's test of normality (Shapiro & Wilk, 1965) revealed non-normal distributions of threat vigilance scores in both our ASPD as well as normal population ($p < 0.001$). Because our data was not normally distributed, we subjected the raw data to a log transformation to conform to the normality assumptions of statistical analyses.

Main Analyses

To test our main predictions, we ran separate regression analyses for participants with ASPD and participants without ASPD. In both regression analyses we entered Game type (1 = high control game; −1 = low control game), Relative game inclusion (continuous predictor), and their interaction as predictors, and the log transformed threat vigilance scores as the dependent variable. For ease of interpretation of the interaction effects we standardized the relative game inclusion scores prior to analyses (Aiken & West, 1997). In subsequent simple slope analyses we then recoded game type into '1 = high control, 0 = low control' and vice versa, depending on the specific slope that we wanted to calculate.

ASPD Population

See Fig. 1 for the results. The regression analyses for the ASPD patient population revealed a marginal Game type × Relative Game inclusion interaction-effect on threat vigilance, $B = 0.025$, $SE = 0.013$, $t = 1.942$, $p = 0.062$. Main effects of game type $B = -0.010$, $SE = 0.011$, $t = -0.939$, $p = 0.355$, or relative game inclusion $B = -0.007$, $SE = 0.006$, $t = -1.306$, $p = 0.201$ were not significant.

As expected, simple slope analyses showed that in the low control game, relative game inclusion was negatively related to threat vigilance, $B = -0.013$, $SE = 0.006$, $t = -2.140$, $p = 0.041$, suggesting that the less participants were included in the low control game (the less ball tosses they received from the other players) the more vigilant they became for the threatening faces in the dot probe task. In the high control game, relative game inclusion was not related to threat vigilance, $B = 0.011$, $SE = 0.011$, $t = 1.028$, $p = 0.313$. This means that in the condition in which participants with ASPD could control their own inclusion in the game we found no evidence that lower game inclusion led to heightened threatened vigilance; only in the condition in which participants with ASPD could *not* control their own inclusion we found evidence that lower game inclusion led to heightened threatened vigilance.

[3] We consider RT's faster than 300 ms and slower than 3000 ms to be response times generated by processes other than the one that we are interested in – threat vigilance. Sometimes participants do not remove their finger from the key in between two trials, resulting in extremely fast RT's. Or they are temporarily distracted from the task, resulting in extremely slow RT's. In literature different cut-off points are chosen, ranging between 200 and 2000 ms (see for example Koster et al., 2004). We choose a higher upper-limit of 3000 ms because our patient population was on average slower than our normal population, probably due to less experience with computers. Many of them indicated to never have used a computer.

[4] Another possibility is that RT's on the incongruent threatening trials (the dot appearing at the location of the neutral face) are slower than RT's on the neutral trials. This would indicate a difficulty in disengaging from threat considering the time needed to shift attention from the threatening to the neutral location. We only found results on the vigilance measure.

Table 1
Mean Total Number of Ball Tosses in Both Rounds of Cyberball and Mean Percentage of Balls Received by Participants, Differentiated for Participants in the Low and High Control Conditions

	ASPD participants		Normal participants	
	Low control	High control	Low control	High control
Mean total number of ball tosses (*SD*)	112.82 (*29.27*)	116.47 (*18.17*)	111.29 (*17.79*)	119.82 (*19.19*)
Mean percentage of balls received by participants (*SD*)	16% (*1.78*)	16% (*3.28*)	15% (*1.63*)	16% (*2.65*)

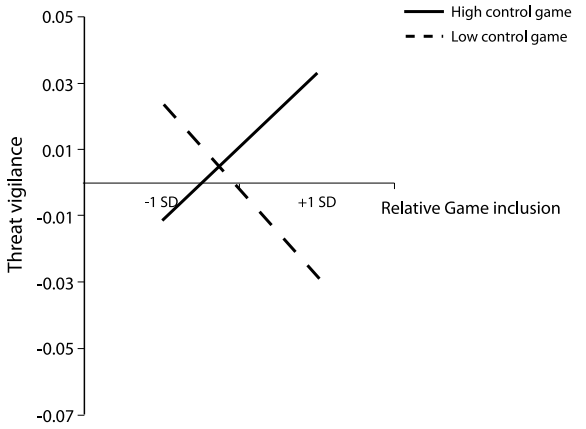

Figure 1. Threat vigilance among individuals with ASPD as a function of game type and game inclusion. Higher values indicate higher threat vigilance. Lines depict beta's in the low-control and high-control rejection conditions. Results show that among individuals with ASPD exclusion is only related to heightened vigilance if it occurs outside individuals' control (dotted line.)

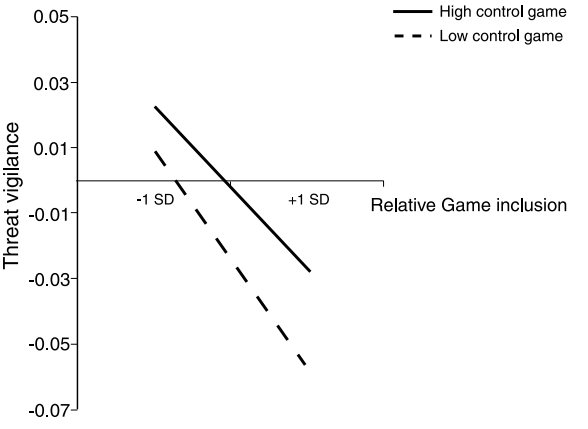

Figure 2. Threat vigilance among normal participants as a function of game type and game inclusion. Higher values indicate higher threat vigilance. Lines depict beta's in the low-control and high-control rejection conditions. Results show that among normal participants lower game inclusion is related to heightened threat vigilance regardless of control in the game.

Normal Population

See Fig. 2 for the results. The regression analyses for the control population revealed, as expected, only a main effect of relative game inclusion on threat vigilance, $B = -0.035$, $SE = 0.014$, $t = -2.484$, $p = 0.019$, suggesting that regardless of game type, the less participants were included in the game (the less ball tosses they received or claimed from the other players) the more vigilant they became for the threatening faces in the dot probe task. As expected the main effect of Game type, $B = 0.024$, $SE = 0.023$ $t = 1.041$, $p = 0.304$, and the Game type×Relative Game inclusion interaction-effect, $B = 0.009$, $SE = 0.032$ $t = 0.289$, $p = 0.774$, on threat vigilance were not significant.

General Discussion

In the present paper we tested whether exerting control would reduce the immediate impact of ostracism on threat vigilance among violent offenders with an antisocial personality disorder (ASPD). We conducted a Cyberball experiment among clinically diagnosed criminal offenders with ASPD and normal individuals, who either received high control or low control over the game before they were ostracized. Corroborating our hypotheses, results revealed that having control over the game prior to exclusion mitigated threat vigilance only among the ASPD population, but not among the normal population. Normal individuals only responded to their level of inclusion in the game; the less they were included, the more vigilant they became for threat. In other words, when exposed to a Cyberball-induced experience of rejection, individuals with ASPD react similarly as normal individuals, but with one important exception: if ASPD patients experience a sense of control before playing the game, then they no longer show increased threat vigilance. These results suggest that gaining control is more important for individuals with ASPD than it is for normal individuals.

We believe that our findings might be an interesting addition to Williams' (2007) model of ostracism. An important argument of this model is that immediate responses to ostracism are hard-wired and difficult

to override by potentially mitigating factors. From a functional perspective this makes sense, because an immediate stress response to ostracism is necessary to maximally motivate reconnection behaviors (Bernstein, Young, Brown, Sacco, & Claypool, 2008). Our results show that, individuals who have a chronically high need for control are less affected by ostracism when they temporarily gain control. This means that they will probably be less motivated to rebuild connections with others. Ironically, reconnection is exactly what these individuals (should) need. We believe that the same mechanism could apply for other basic psychological needs that are thwarted by ostracism as well: self-esteem and meaningful-existence. For example, we would expect that an individual who suffers from extreme low self-esteem should be less affected by ostracism when he or she temporarily gains self-esteem, than somebody who does not suffer from extreme low self-esteem. In other words, an individual who craves the liking and approval of others is so concerned with his or her self-esteem that, if an opportunity to *gain* self-esteem arises, he or she will be less affected by ostracism. However, whether our findings on control also extend to other needs is ultimately an empirical question that can be addressed in future research.

Our findings may be of interest to clinicians treating patients with ASPD. Patients with ASPD are known for their temper, especially in social situations. They are easily provocated by others and quickly revert to aggression (Walker, Thomas, & Allen, 2003). Possibly they over interpret provocations and rejection as threats to control. Even though reasserting control through aggression offers than the advantage of being less affected by ostracism, this decreases their chances to build lasting relationships with others. Maintaining control at all cost fuels antagonistic responses from others and thus may not always be a solution to every problem. In therapy individuals could learn that not every criticism can be dealt with by asserting control, and that affiliating with others and working on ones' self-esteem are very beneficial alternatives.

Important to note is that our results on control needs among individuals with ASPD might be relevant for the ongoing debate on how ASPD should be classified. More specifically, the DSM-IV only describes behaviors that accompany the disorder, mainly violent, impulsive and selfish behavior. It does not mention possible underlying psychological mechanisms. To the extent that therapists might rely solely on this characterization of ASPD, by focusing for example only on reducing impulsivity, our results suggest that taking into account disordered control needs could be an important addition to the classification of ASPD and the treatment of individuals.

Strengths, Limitations and Future Directions

A potential limitation of our study is that we only focused on implicit threat vigilance as a dependent variable. We did not assess social pain (Eisenberger, 2003) or its proxy, fundamental needs and mood. Future research could thus focus on these other measures to capture the immediate response to ostracism. We expect that for individuals with ASPD control will also mitigate these other, often called, reflexive measures (Williams, 2007).

Our paradigm enabled us to show that control is very important in the typology of ASPD. Future research might focus on how this translates to social perception and behavior. For example, individuals with ASPD might have a bias in that they perceive different forms of rejection all as threats to their ability to control. This might hinder them to appropriately respond to rejection. Future research might thus focus on behavioral consequences of this excessive need for control.

A related line of research could focus on psychological defense mechanisms among patients with ASPD. Our results suggest that for these patients defense mechanisms mainly revolve around an imagined ability to control others, much like the narcissists' delusion of grandiosity. It may be the case that these patients delude themselves into thinking they will not feel hurt by rejection because they have power over others.

Finally, our findings on threat vigilance are interesting in itself, because implicit measures have been relatively scarce in ostracism research. Recently, some research is done on basic attentional processes in reaction to ostracism (Bernstein, Sacco, Brown, Young, & Claypool, 2010; Bernstein, et al. 2008). Specifically, DeWall, Maner, and Rouby (2009) did a study which shows that after an experience of ostracism individuals had an automatic preference for smiling over angry faces (i.e. a preference for acceptance cues). In our study we also focused on faces that were not associated with the rejection experience. But future research could also assess reactions to faces of the source of rejection. We would predict that, irrespective of whether the face is novel or belongs to the source, patients with ASPD would solely focus on angry faces but not on happy faces, as they are too concerned with regaining control and less with rebuilding reconnection.

Conclusion

This research is one of the first to complement literature on ASPD with experimental evidence that control is very important for individuals with ASPD. Possibly, individuals with ASPD interpret social exclusion mainly as a control breach. Ironically, this may further thwart their acceptance by others and their maintenance of meaningful relationships. After all, as unwanted as rejection may be from the individuals' perspective, rejection and reactions towards it have a functional character as well (Stormshak, Bierman, Bruschi, Dogde, & Coie, 1999; Brewer, 2005). It helps to correct dysfunctional and unwanted behaviors. The excessive control needs that individuals with ASPD have jeopardize this functional aspect of rejection. One could say that these individuals are trapped in a vicious circle in which their excessive control needs lead them to be rejected by society, which they try to solve by asserting even more control over others.

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